# Problem Solving Tools - Trimming

**Definition Trimming:**
The problem-solving tool trimming attempts to simplify a system in such a way that the same or better function is provided, but elements of the system can be omitted. The tool follows the "trimming" trend: the trend describes how systems eventually evolve to contain fewer and fewer elements while maintaining (or in some cases increasing) functionality.

## Basic rules of the Trimming tool and system improvements

**Prerequisite**: completed functional and attribute analysis (FAA) model
**Trimming Provocation:** "Why don't we eliminate this element?"
**Main objective**: to remove redundant elements from a system.

**Sequence**:
Start question: why don't we eliminate this element?

Trimming questions (ordered hierarchically).

- Do we need the useful function(s) performed by this element?
- Can one of the other elements in the system perform the useful function(s) instead?
- Could we modify one of the other elements to perform the useful function(s)?
- Is there an element or resource around the system that can perform the function(s)?
- Is there an element or resource around the system that could be modified to perform the function?
- Can we perform the function(s) by combining other elements and resources?

Moving down, it becomes increasingly difficult to trim an element. If questions can be answered positively further up, this usually leads to a more ideal solution.

For processes, the questions are essentially the same as above, just applied to processes.

## Trimming Sequence

The Trimming Sequence contains certain guidelines for application of trimming, but they do not tell us which elements can be trimmed in which order

1) Elements with the most harmful external influences are the main candidates for trimming.
2) Elements with highest costs should be considered for trimming before elements with lower costs.
3) Elements that perform the most important functions in the system offer the highest potential gain if they can be successfully trimmed.
4) Elements with few useful functions are also prime candidates for trimming.

# 2 Trimming - The Big Picture

To decide when trimming can be applied at all, three aspects should be considered:

**(a) Function capture**
All functions present in a system must be recorded and captured as thoroughly and completely as possible. Furthermore, the FAA must be comprehensive and, if possible, validated by more than one person. The 9-window tool helps with this. As a result, you want to be absolutely sure that all useful function arrows are captured pointing away from the element.

**b)Viable System Tests**
Viable System Model (VSM) according to Stafford Beer describes 5 necessary conditions for viability of a system: *Implementation, Coordination, Intelligence, Control, Policy*

*Implementation:*
Defined as the parts of the system responsible for performing the primary activities.

*Coordination:*
Individual elements and of the system must communicate with each other. The more they do and the less imposed from above, the more autonomously the elements or subsystems function.

*Intelligence:*
Is the two-way linkage between the primary activity of the system and its environment. This allows it to adapt to future changing environmental influences.

*Control*:
Is defined in VSM as the (two-way) communication between subunit and meta-level.

*Policy*:
The policy function provides closure to the system as a whole by deifying the overall direction, values, and purpose of the organizational unit.

**Key Point:** If you try to remove any of these essential elements from a system, you basically have to find a replacement for them because the system is not viable without them.

**c) Coupled functional requirements**
The complexity of a system increases over time and then continues to be optimized. The complexity of a system is not equal to the number of elements. High complexity can also be generated by few elements with many functions.

Trimming must never endanger autopoetic (self-sustaining) capability level of the system

Important questions to ask before trimming an element from the system:
Are there any coupled functions?
Are there aspects of the element to be trimmed that link our system to the system at the next higher level in the hierarchy?

If the answer to either question is "yes", trimming should be used only with caution.